

MILITARY RUSSIA
DOMESTIC MILITARY EQUIPMENT (after 1945)

Select Language ▼
Powered by Google Translate

ARTICLES FORUM

RDS-37

Author: [DIMMI](#)
 Created: 03/16/2014 01:58:39 AM Modified : 10/29/2019 08:39:25 PM
 Comments: 0
 Categories: [AIR](#) / [Bombs](#) / [Atomic bombs and charges](#) / [RDS-37 \(1955\)](#) /

DATA FOR 2019 (standard replenishment) RDS-37

★ ★ ★

Thermonuclear bomb with a two-stage type charge with nuclear compression. The development of the bomb was carried out by KB-11, the chief designer and scientific supervisor of the work was Yu.B. Khariton, the project manager was A.D. Sakharov.

At the beginning of 1954, at a meeting at the Ministry of Medium Machine Building, 8 variants of the SD design were considered - high-power bombs, higher than the previously tested RDS-6s (SD - "modified puff"). All considered variants of charges did not give a power of more than 1.5 Mt, which was considered insufficient. At the same time, the cost of the SD product was estimated to be 20 times more expensive than the cost of the RDS-2. Also at the beginning of 1954, a new principle of nuclear compression was proposed by Sakharov and Zel'dovich based on the ideas of V.A.Davidenko.

On December 24, 1954, the Scientific and Technical Council of KB-11 was held under the chairmanship of I.V. Kurchatov. The Council was attended by the Minister of Medium Machine Building V.A. Malyshev, the management of KB-11, scientists and designers-developers of atomic charges. The meeting discussed the problem of creating a high-power hydrogen bomb based on a new principle. Yu.B. Khariton made a proposal to carry out in 1955 a model experiment of a full-scale design of a new bomb. As a result of the discussion, the council adopted the agreed:

- to the management of KB-11 to submit a plan of work on the problem of creating a new bomb with an explanatory note to the Ministry of Medium Machine Building.
- to allow, before the approval of the work plan on this problem, the development of a bomb - a device and its testing at test site No. 2 in 1955 (*source - Volume 1*)

The development of a new type of thermonuclear charge was carried out both to equip it with an aerial bomb and for the R-7 intercontinental missile - in the case of a rocket, the charge power was supposed to level the low accuracy of the future rocket.

During the first half of 1955, the development of a prototype bomb-device was carried out to test the new principle. The terms of reference for the manufacture of a new design hydrogen bomb was issued on February 1, 1955. A.P. Zavenyagin, heads of the Main Directorate P.M. Zernov, N.I. Pavlov. At the meeting held on May 27, 1955, the issue of the state of work on the development of the bomb, the RDS-37 device, was considered. Ya. B. Zel'dovich made a report on this issue. He presented the material on the flow of a thermonuclear reaction in the RDS-37 device. Zavenyagin's question followed: "Are there any other doubts?" - "If we talk about power with an accuracy of only ± 40%, then there is no doubt," Zel'dovich replied. According to the results of the meeting Zernov, Pavlov, Khariton, Negin. Dukhov, Bessarabenko prepared a decision, which was approved by Zavenyagin on May 31, 1955 and in which it was written: "Approve the scheme of the RDS-37 experimental device presented by KB-11" (*ist. - Volume 1*).

Experimental work (gas-dynamic experiments) to test the elements of the bomb and the corresponding design changes were carried out until the end of September 1955 (*source - Volume 1*).



Bomb with RDS-37 charge, 11/22/1955 ([source](#)).

Catalog

- AIR
 - Bomber
 - Fighters
 - Transpoc
 - Special
 - Helicop
 - UAV
 - Air-to-a
 - Air-to-g
 - Aviator
 - Aviator
 - unguide
 - Aviator
 - bombs
- Atom
 - Tir
 - RC
 - RC
 - prc
 - RC
 - RC
 - RC
 - RC
 - RC
 - RC
 - RC
 - 8U
 - RC
 - 8U
- Aviator
- EARTH
- WATER
- SPACE
- Personalit
- News and

latest con

- [RDS-37](#)
It looks like yc I'll try not to d
[DIMMI](#) 2019-11
- [RDS-37](#)
Most likely co of the forum a days of work v
[DIMMI](#) 2019-11
- [RDS-37](#)
Most likely no comments. nc me...
[DIMMI](#) 2019-10
- [RDS-37](#)
An article from fizicheskikh n: editors of the ,
[mpashnev](#) 201
- [RDS-37](#)
Articles from t magazine "At
[mpashnev](#) 201
- [RDS-37](#)
RDS-37 after
[ARGON](#) 2015-1
- [RDS-37](#)
Here is a boy
[Zyuzya](#) 2014-0

Tests . The Council of Ministers of the USSR, in a special resolution, entrusted flight tests of the RDS-37 bomb-device to KB-11, the USSR Air Force and training ground No. 2 of the USSR Ministry of Defense. The Commander-in-Chief of the USSR Air Force, by orders of October 12 and 13, 1955, entrusted the implementation of this decision to military unit 93851 and determined in connection with this its main tasks:

- targeted bombing of the RDS-37 bomb from an aircraft;
- control of the bomb automation on the bombing trajectory;
- protection of the carrier aircraft by MiG-17 fighters;
- sampling of explosion products on Il-28 aircraft, observation of cloud movement;
- control of flights and equipment of command posts.

From October 25 to November 16, 1955, special preparation of the aircraft for testing was carried out in OKB-167 MAP to ensure the safety of the crew. The lacquer was washed off from the lower part of the surface of the fuselage, plumage and wings. All dark-colored surfaces were coated with a special white paint. A number of seals were also replaced. In order to increase the distance from the explosion site to the carrier aircraft and reduce the light pulse to an acceptable level, the management decided to equip the bomb with a parachute of the PG-4083 type, developed for the [RDS-6s](#) bomb by the Research Institute of Parachute Equipment. The order for parachutes was issued by the MSM on October 17, 1955, and on October 28, 1955 they were delivered to the training ground No. 2 of the MO ([source](#) - *Volume 1*).

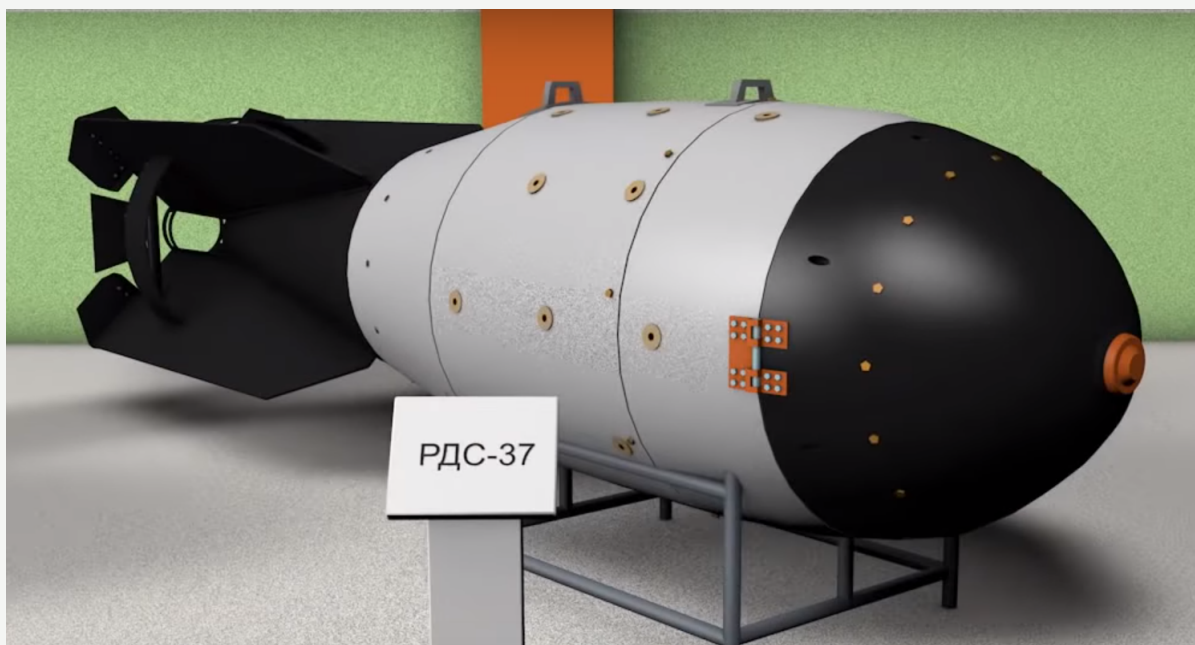
Bomb tests were carried out at the Semipalatinsk test site (field P-5) on November 22, 1955. The bomb was dropped from a Tu-16A aircraft (crew commander Major Fedor Golovashko) and the explosion was carried out at an altitude of 1550 m. The explosion power was half the nominal - 1.6 Mt TNT equivalent. The first attempt at testing was carried out on November 20, but due to the lack of visual visibility of the target, when the radar sight failed, the bomb was not dropped and the aircraft landed for the first time in the history of aviation with a combat atomic bomb ([source](#) - *Volume 1*).

The results of the test were considered by a special commission, which came to the following conclusions:

- the design of a hydrogen bomb based on a new principle was successfully tested;
- further detailed study of the processes occurring during the explosion of a bomb of this type is necessary;
- further development of hydrogen bombs should be carried out on the basis of the widespread use of the principles underlying the RDS-37 bomb.

The RDS-37 charge and bomb were not accepted into service, but many subsequent thermonuclear charges were created on their basis.

Design - the product is made in the body of a specially designed aerial bomb, similar to the body of the [RDS-6s](#) / RDS-6SD bomb. The bomb was equipped with a PG-4083 parachute, which was developed by the Scientific Research Institute of Airborne Equipment for the [RDS-6s](#) bomb .



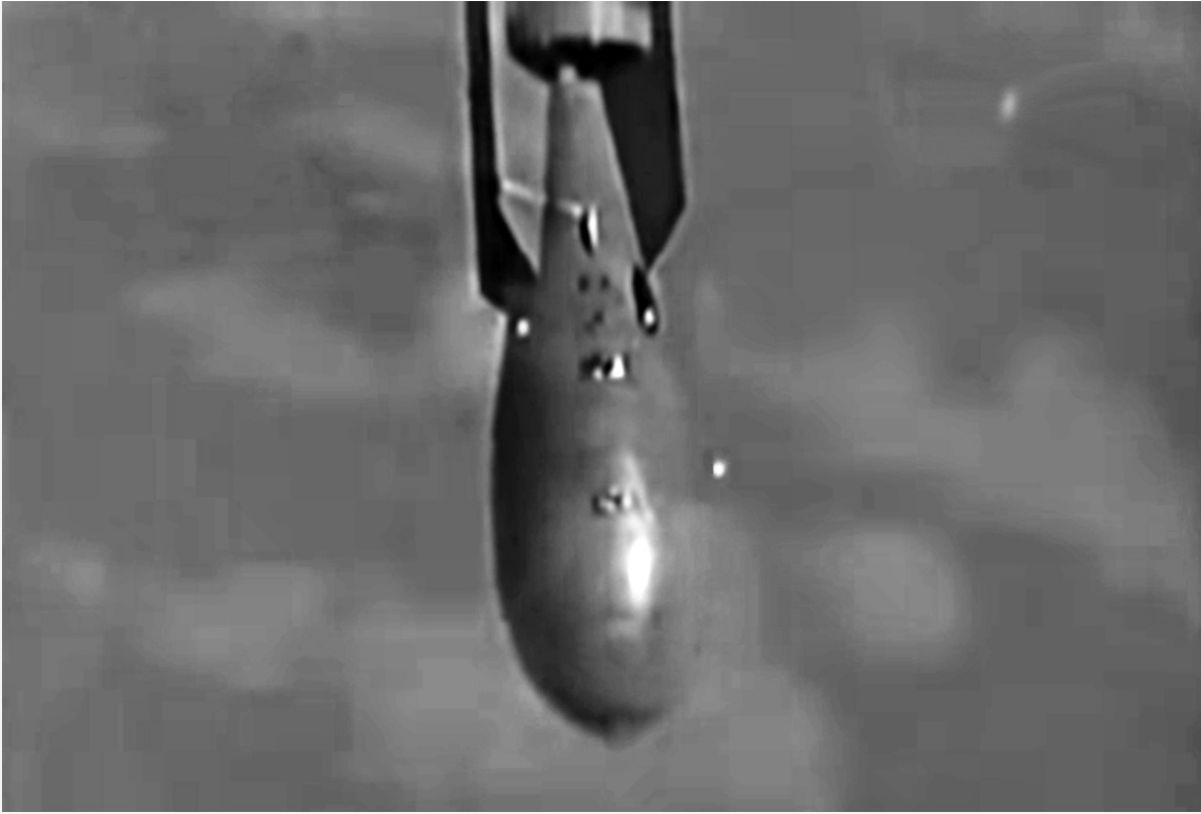
Reconstruction of the external view of the RDS-37 aerial bomb ([source](#)).



Bomb with RDS-37 charge, 11/22/1955 ([source](#)).



A bomb with an RDS-37 charge in the first moments after being dropped from a carrier aircraft, 11/22/1955 ([source](#)).



A regular bomb with an RDS-37 charge, tested on 09/24/1957 ([source](#)).

Performance characteristics of the product :

Length - up to 7 m
Case diameter - 1.5 m

Weight - 5570 kg ([source](#) - *Proposal*)

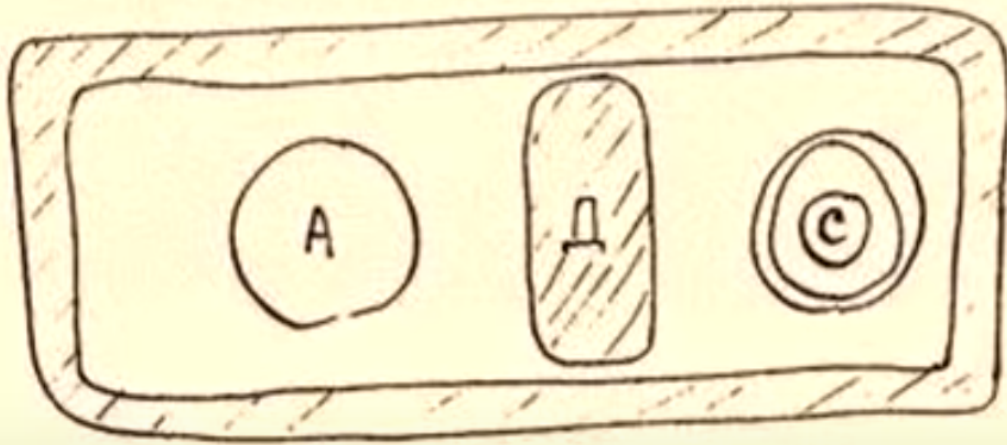
Explosion power:

- 1700 kt (11/22/1955, etc., half power due to the replacement of uranium with an inert substance)
- 2900 kt (06.101957, full power or advanced charge)

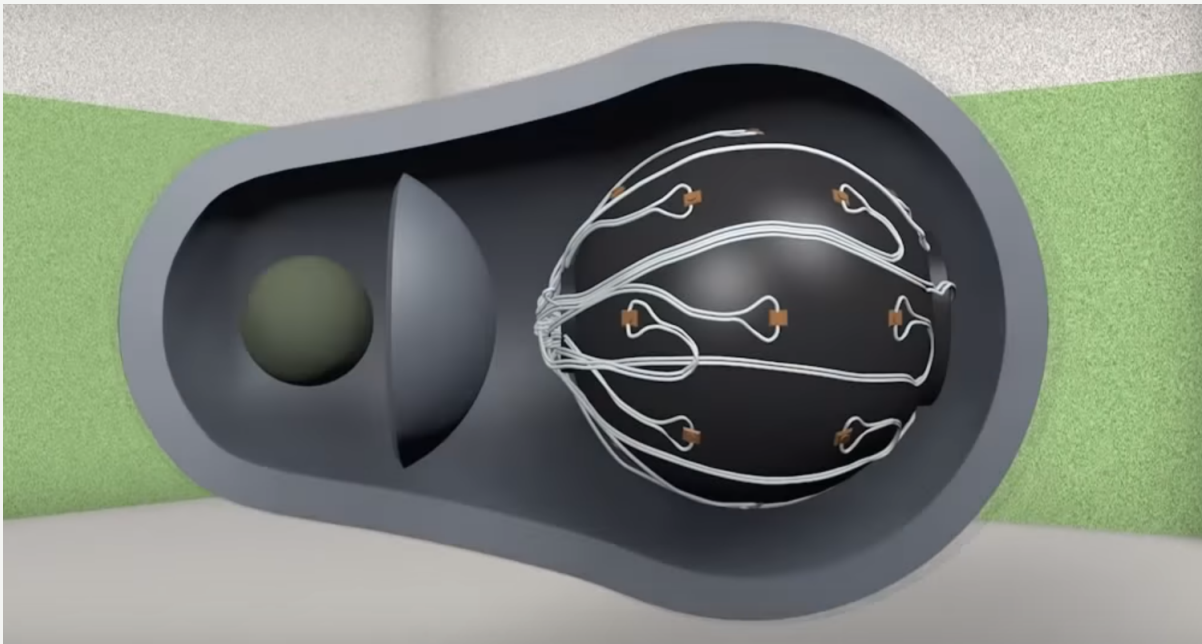
Charge type - two-stage thermonuclear / thermonuclear charge with nuclear compression. Primary nuclear charge of compression type RDS-4 ([source](#) - *Proposal*) with a core of U-233 / U-235, a beryllium diaphragm, a secondary charge of the "puff" type similar to RDS-6s from lithium deuteride and U-238. The primary and secondary charges are presumably enclosed in a pear-shaped casing with a beryllium diaphragm (*original* - *Proposal*). For the second stage, 252 beryllium columns were made, transparent to x-rays, but they were used in the screen or they were used to make a layer of "coating" or they were an intermediate element for fastening the second stage to a power ring of three rods of an unknown metal is not known. Also in the design of RDS-37 (see materials on RDS-202) a neutron filter was included - it was also made of beryllium, but its shape and dimensions are not known. Secondary charge diameter - 820 mm ([source](#))

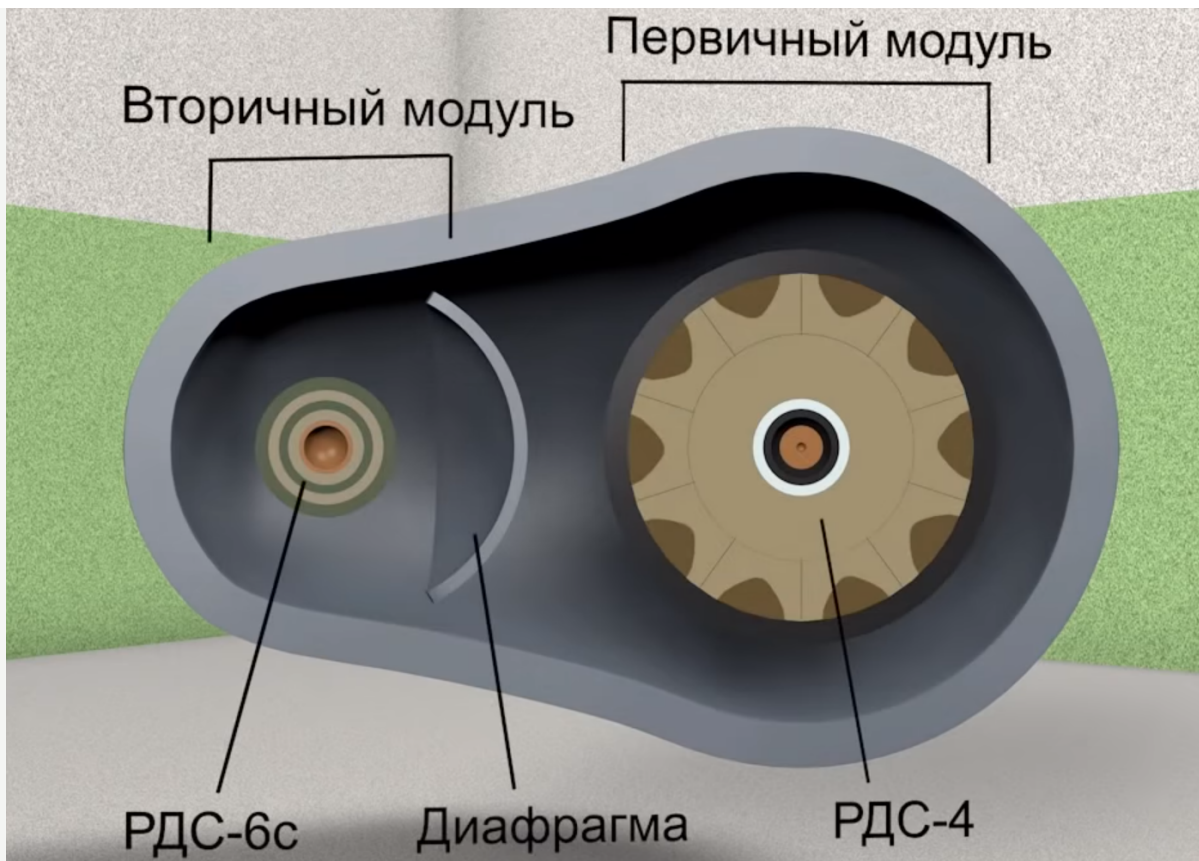
Contact fuses (in the nose of the bomb) and barometric. On the sides of the body of the bomb are technological holes for the installation of detonator caps of a nuclear charge of compression before combat use.

русская схема устройства для ао
 сверхзвука и оценочные расчеты её
 действия. ~~Для~~ Промышленое ао было
 предложено В.А.Давиденко.
 Схема.



Sakharov/Davidenko's initial schematic diagram of a charge with atomic compression ([source](#)).





Estimated basic layout of the thermonuclear charge RDS-37 ([source](#)).

Carriers :

- Tu-16A - standard carrier aircraft, the bomb was developed for use from the Tu-16A carrier aircraft.





Carrier aircraft Tu-16A during tests of a bomb with an RDS-37 charge, 11/22/1955 ([source](#)).

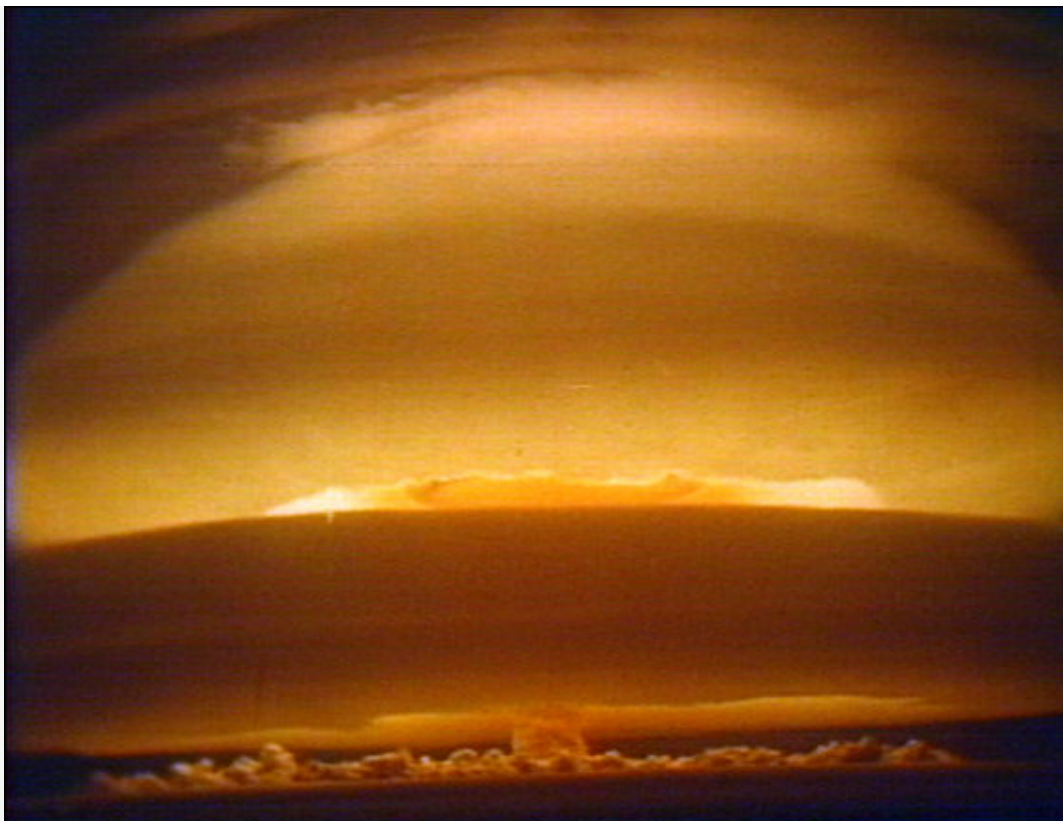
- ICBM R-7 - the power of the charge was supposed to level the low accuracy of the future rocket.

Status : USSR

- 1955 November 20 - the first Tu-16A bombing flight to test the RDS-37 bomb at the P-5 site of the Semipalatinsk test site. The test did not take place due to the lack of visibility of the target, as well as due to the failure of the radar bomber sight ([source](#) - *Volume 1*).

- 1955 November 22 - the first test explosion of a thermonuclear bomb RDS-37. At 0655 hours the bomb was suspended from the aircraft. The plane took off at 08:34. At 09:47, targeted bombing was carried out from a height of 12 km and at an aircraft speed of 985 km/h. The bomb was dropped over the experimental site P5. The bomb explosion occurred at an altitude of 1550 m. At the time of the explosion, the aircraft was 15 km away from the explosion site. Explosion power - 1.7 Mt. It was used to measure the light pulse, the heating temperature of the duralumin sheathing and the protective coating. The impact of light radiation on the open parts of the body of the navigator-scorer in the cockpit was, in his words, "stronger than in the hottest sunny weather" ([source](#) - *Volume 1*).





Testing a bomb with an RDS-37 charge on November 22, 1955 (<http://wsyachina.narod.ru/>).

Sources :

Proposal for testing an experimental device to test the principle of the environment, 05/26/1955 ([source](#))

Shchelkin F.K. Apostles of the Atomic Age. M., De-DiPrint, 2004.

Nuclear tests in the USSR. Volume I. Sarov. RFNC-VNIIEF ([source](#)).

[DISCUSS ON THE FORUM ...>](#)